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ABSTRACT

This guide provides information on steroid use as well as prevention and intervention strategies. It is intended to serve as a supplement to drug abuse education and prevention programs in elementary and secondary schools and as the basis for local curriculum development and instructional activities. The following topics are covered: (1) history of steroid use; (2) reasons for use; (3) social influences which encourage steroid use; (4) how steroids are used; (5) risks and side effects; (6) signs and symptoms of steroid use; (7) sources of steroids; (8) legal and ethical issues; (9) testing; (10) the role of schools in addressing steroid use; and (11) the role of parents in the prevention of steroid use. Twenty-two references, suggested readings, and resource information, are listed. (JD)

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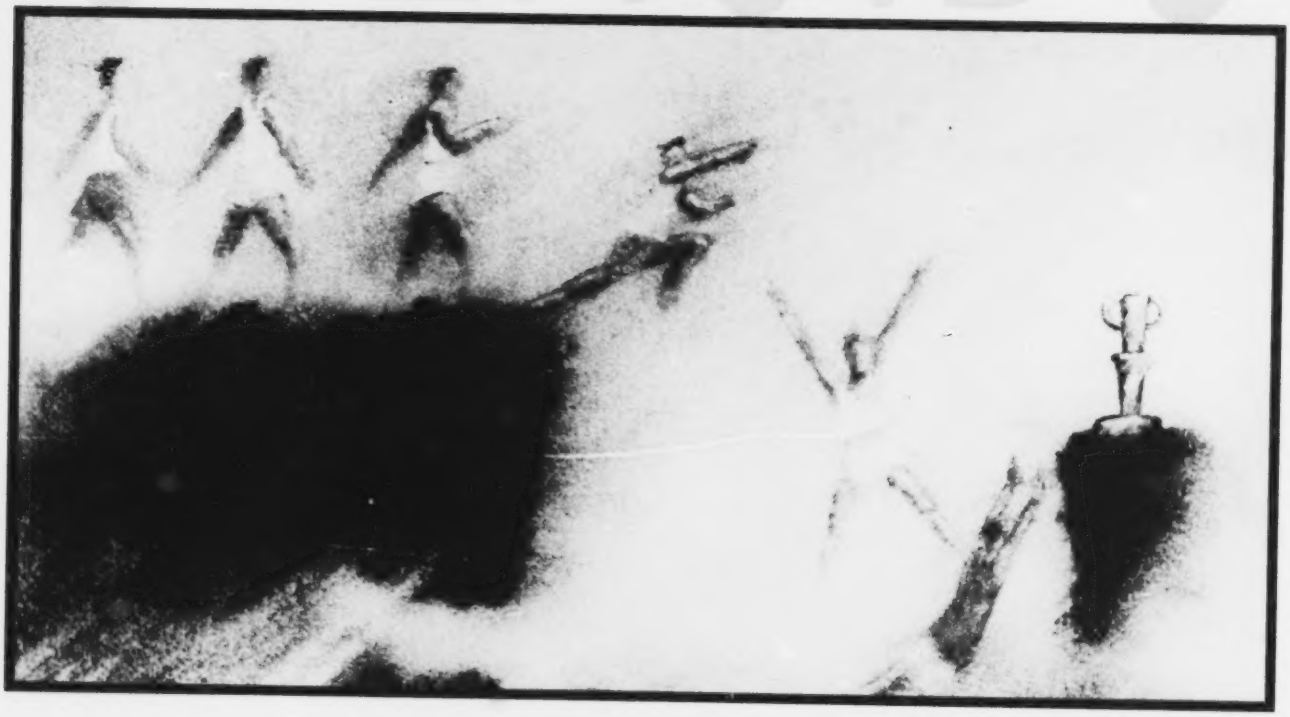
STEROIDS

A RESOURCE GUIDE



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OFFICE OF GENERAL AND OCCUPATIONAL EDUCATION
DIRECTOR, DIVISION OF PUPIL HEALTH AND FITNESS

October 1990

TO: District Superintendents, Superintendents, Principals, Directors of Athletics, Physical Education and Health Education Coordinators of Public and Nonpublic Schools

FROM: Rebecca Gardner, Chief
Bureau of School Health Education and Services

SUBJECT: *Steroids: A Resource Guide*

This publication, *Steroids: A Resource Guide*, is intended to serve as a supplement to drug abuse education and prevention programs in elementary and secondary schools and as the basis for local curriculum development and instructional activities.

This guide should be a valuable resource for schools in addressing the growing use of steroids among young people and in the development of prevention and intervention strategies and programs for schools, parents, and communities.

If additional copies of this guide are needed, please contact the Bureau of School Health Education and Services, 964 EBA, State Education Department, Albany, New York 12234, (518) 474-1491.

STEROIDS

A RESOURCE GUIDE

The University of the State of New York
The State Education Department
Division of Pupil Health & Fitness
Bureau of School Health Education & Services
Albany, New York 12234

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FOREWORD

The goal of this Resource Guide is to provide current information on anabolic steroids to youth and those who work with youth in professional, volunteer, and parenting roles. Additionally, this guide is to serve as a catalyst for incorporating steroid use messages into existing broad-based drug prevention efforts within the framework of comprehensive school health education.

A 1989 amendment to the Drug-Free Schools and Communities Act of 1986 (DFSCA) requires that information on anabolic steroids be included in drug abuse education and prevention programs in elementary and secondary schools. This resource guide was developed as a tool to assist schools and communities in addressing the growing problem of steroid use among young people.

Life is about decision making. Knowing when and how to make the right decisions is often the difference between success and failure. These decisions are even more critical when there are serious health and ethical issues involved.This guide will provide much of the information necessary to understand the physical and psychological consequences of steroid use. However, decisions regarding the use of steroids must be made by the individual, which involves an assessment of personal ethics, as well as health risks.

This resource guide was developed by the Bureau of School Health Education and Services, with funding provided through the Drug-Free Schools and Communities Act Program. Contributing writers were Gary English, Assistant Professor of Health and Physical Education, Ithaca College; Gail Harding, Program Manager, Drug-Free Schools and Communities Act Program, New York State Education Department; James Rusin, Director, Physical Education, Athletics and Health, Williamsville Central Schools and Mary Lou Rusin, Chairman, Nursing Department, Daemen College. Guidance was provided by Advisory Committee members, Donald Lindell, Bureau of Physical Education and Safety Education, New York State Education Department; and Sandra Scott, Executive Director, New York State Public High School Athletic Association.

We wish to thank the following reviewers who provided critical commentary which was most helpful in preparing this document for publication: Robert Ames, Supervisor of Physical Education, Sports & Safety/Section 6 Target Trainer, Lockport Central School; James Funicello, Director of Physical Education, Athletics & Health/Section 3 Target Trainer, Liverpool Central School; Cathy Phillips, Physical Educator/Section 7 Target Trainer, Peru Central School; Judy Shelton, Physical Educator/Section 5 Target Trainer, Webster Central School; State Senator John Sheffer and State Senator Dean Skelos. This document was also reviewed by the following representatives of the New York State Education Department: Jacquee Albers, Director, Drug-Free Schools and Communities Act Program, Bureau of School Health Education and Services; Chike Nnabugwu, Program Manager, Drug-Free Schools; Theodore Wolfstich, Program Manager, Drug-Free Schools; John Quinn, State Health Coordinator, Health Education & Services Network; Elise Russo, Associate, Bureau of Curriculum Development; Nancy Lauria, Associate, Office of Children with Handicapping Conditions; and Dennis Glover, Supervisor, Division of Civil Rights and Intercultural Relations.

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I. HOW TO USE THIS GUIDE

This guide is intended to provide accurate, up-to-date, information on steroid use, as well as prevention and intervention strategies for schools, parents, and communities.

Each topic related to steroid use in this guide has been reviewed and is addressed based on current information presented in scientific reviews found in the literature. In most sections there are additional suggested readings. Some of these readings provide additional scientific support to the summarized section, and others are from the lay press and provide a humanistic view of the problems associated with steroid use.

Several topic areas are followed by a shaded summary of the key points that have been addressed.

Appendix A - a glossary of terms related to steroid use, found in the text in italics.

Appendix B - a bibliography of resources on steroids that are referenced in the text with footnotes.

Appendix C - a list of suggested books, articles, pamphlets, and audiovisuals on steroid use, with purchase information, when available.

Appendix D - a list of statewide resources on steroid education, prevention, and training.

Appendix E - contains information on national resources related to steroids.

If additional copies of this guide are needed, contact the Bureau of School Health Education, 964 EBA, State Education Department, Albany, New York 12234, (518) 474-1491.

II. WHAT ARE STEROIDS?

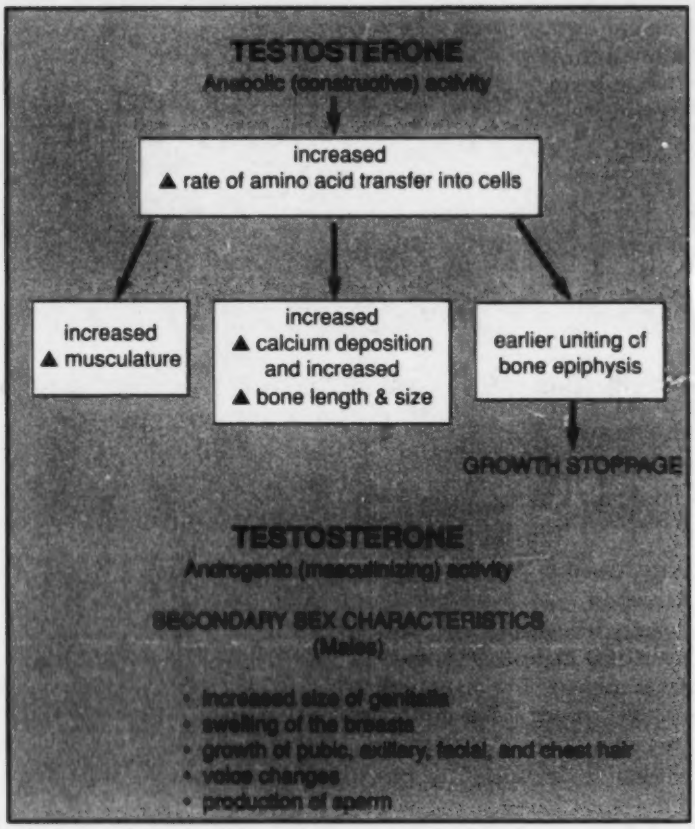
Anabolic-androgenic steroids are a synthetic derivative form of the male hormone testosterone, a naturally occurring hormone which is produced and secreted by the testicles. Testosterone is necessary for the differentiation, growth, and development of the male sexual organs. Male secondary sex characteristics, such as deepening of the voice and male pattern hair growth, are all caused by the action of testosterone.

Testosterone also has an anabolic, or constructive quality. It increases the rate of amino acid transfer into the cells, which produces several changes, including increase in musculature. In adolescents, an increase in bone thickness and calcium deposition leads to greater length and size of the bones. However, testosterone also promotes earlier uniting of the bone *epiphysis* to the shaft, causing premature growth stoppage.

Although drug companies have attempted to disassociate the androgenic, masculinizing effects of testosterone from the anabolic, building effects, no preparation is currently available that provides the anabolic effect without the androgenic component.

Unless taken in large doses, testosterone is relatively ineffective given orally, since most of the drug is metabolized by the liver, thus making it highly toxic to the liver. Therefore, many users turn to injectable administration using needles and syringes.

In the blood, 98-99 percent of testosterone is bound to proteins, making it unusable. Only about 1 percent - 2 percent of testosterone is free, or available for use. Since the byproducts of the drug are excreted mostly through the urine, the use of steroids can be detected through urinalysis. Some anabolic steroids are made using an oil base which slows excretion from the body. Even limited use of steroids can be detected through testing months after initial use, especially when using oil-based preparations.



The only Federal Drug Administration (FDA) approved uses of anabolic steroids are in the treatment of certain types of anemia, certain kinds of breast cancer in women, *hereditary angioedema*, and *osteoporosis*. When steroids are taken therapeutically, that is, prescribed and monitored by physicians to treat specific health conditions, they can have medical benefit. However, the doses and patterns of administration used by the self-administering athlete often differ markedly from those used therapeutically—often by 10 times or more. The steroid user who thought that the prescribed 5 milligram pills helped build muscle, assumed that 10 milligrams, or two pills, would add even more muscle. Anabolic steroids should not be confused with *corticosteroids*—the anti-inflammatory drugs which are widely used to treat muscle and joint problems, and skin rashes.

III. HISTORY OF STEROID USE

The dramatic growth of steroid use in recent years raises many questions regarding just how these drugs gained their body-building reputation. Both clinical and nonclinical use of steroids has led to an exaggerated belief in their benefits.

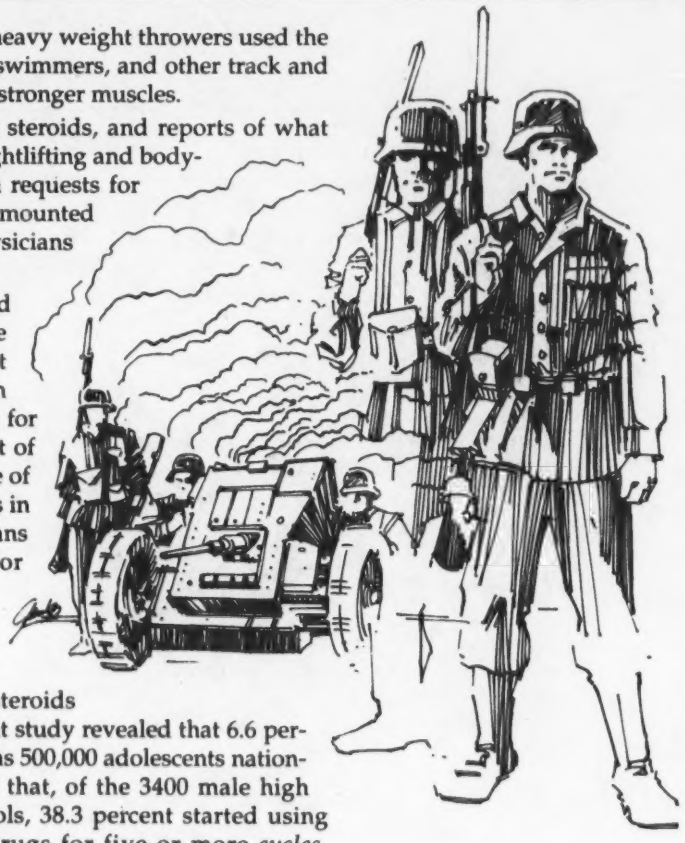
In the 1930s, physicians used anabolic steroids to restore vitality in aging men who were presumed to have low testosterone levels. Anabolic steroids were also tried clinically during and after World War II in an effort to speed the rehabilitation of prisoners of war who were the victims of enforced starvation. Although the therapy was successful, the side effects proved to be so severe that this practice was discontinued. Nonclinical use of steroids also dates back to World War II when they were first used in an attempt to increase aggressiveness in the German soldiers. Later, in the 1950s, the Russians gave their athletes (both men and women) the male hormone, testosterone, that apparently helped competitors build muscle. As a result, the Russians dominated many international sports at the time.

The political impact of the Cold War heightened athletic competition and was the impetus for an American physician to develop a variation of a drug that was related to testosterone. The physician developed a form of anabolic steroid for use by weight lifters which was supposed to build muscle while minimizing the masculinizing side

effects of testosterone. At first only weight lifters and heavy weight throwers used the drug, but very quickly use spread to football players, swimmers, and other track and field competitors, all of whom were in search of larger, stronger muscles.

People began experimenting on themselves with steroids, and reports of what was considered a wonder drug were published in weightlifting and body-building magazines. Physicians were inundated with requests for prescriptions for steroids, but as the medical literature mounted about the side effects resulting from steroid use, physicians stopped prescribing them as readily.

In New York State, anabolic steroids are considered by law to be controlled substances, and as such, require prescriptions in triplicate from the physician, may not be refilled, and may not be prescribed by phone. In addition, physicians must log all prescriptions written for anabolic steroids with the New York State Department of Health. This is done to track the prescription and usage of these drugs. Since there is no indicated use for steroids in building muscles in healthy individuals, few physicians will risk their licensure to prescribe these drugs for athletes and bodybuilders.

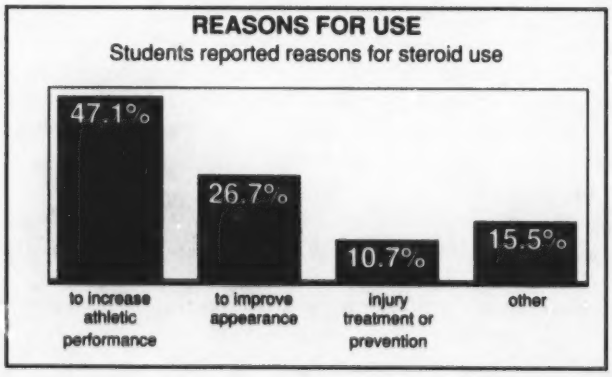


Extent of Use

Until recently, much of the interest in anabolic steroids has focused on their use by athletes. However, a recent study revealed that 6.6 percent of male high school seniors and perhaps as many as 500,000 adolescents nationwide have used steroids. [1] This study also revealed that, of the 3400 male high school seniors polled in 46 public and private schools, 38.3 percent started using steroids before they were 16 and had taken the drugs for five or more *cycles*. Additionally, nearly 40 percent had injected oil-based versions of the drug.

IV. REASONS FOR USE

Of those reporting steroid use, 47.1 percent indicated that their main reason for using this drug was to improve athletic performance. Another 35.2 percent indicated that they did not intend to participate in a school-sponsored activity. However, these users still may compete in athletic competition, primarily at the amateur level, or on an individual basis in activities such as body building and weight lifting. Physical appearance was selected as the main reason for use among 26.7 percent of the user group. Although it is not an accepted medical practice, the use of anabolic steroids for injury prevention or treatment was reported by 10.7 percent of users. [2]



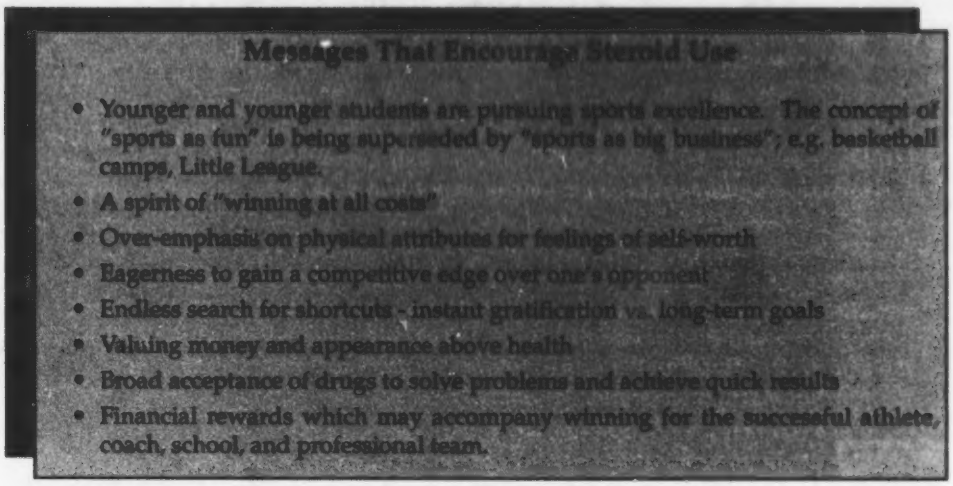
For years, the scientific community refused to recognize that the use of anabolic-androgenic steroids had the ability to enhance muscle size and strength. Through experimentation, many who used the drug found this scientific information inconsistent, for indeed, several individuals found that muscle size and strength could be enhanced though the use of these drugs. As a result of these experiences, many steroid users considered the statement, steroids do not enhance size and strength, to be a lie and, therefore they assumed that the information regarding the health risks was also in error. Although there is much that is not known about steroids, there are demonstrated short and long-term health risks.

As a society, we have come to idolize the star athlete, or at least the appearance of the muscular athlete. From early childhood, boys learn that the ideal man looks something like Mr. Universe. Saturday morning television is filled with cartoon characters with huge, abnormally-muscled heroes. Sports stars, like Olympic sprinter Ben Johnson and former Seattle Seahawk linebacker Brian Bosworth, are known to have taken the steroid shortcut. Hence, it should be to no one's surprise that many physically underdeveloped people are willing to pay large sums of money for pills and injectables that have the ability to enhance their physical appearance.

V. SOCIAL INFLUENCES WHICH ENCOURAGE STEROID USE

We live in a chemical-using society. The growing problem of steroid use, as well as the use of alcohol and other substances, reflects the chemical-using behavior of the larger community that is accepted and tolerated throughout much of society. For this reason, efforts to prevent steroid use by youth must be multifaceted and must address the social norms and institutions that influence young people.

Athletics is only a mirror of other segments of society where a drive for wealth and prestige may supersede health and ethical concerns. A recent position paper issued by the University of Minnesota addressed the powerful social influences that encourage the use of anabolic steroids. [3] Addressing these underlying messages can form the basis for discussions and other prevention strategies focused on reducing the risk of steroid use.

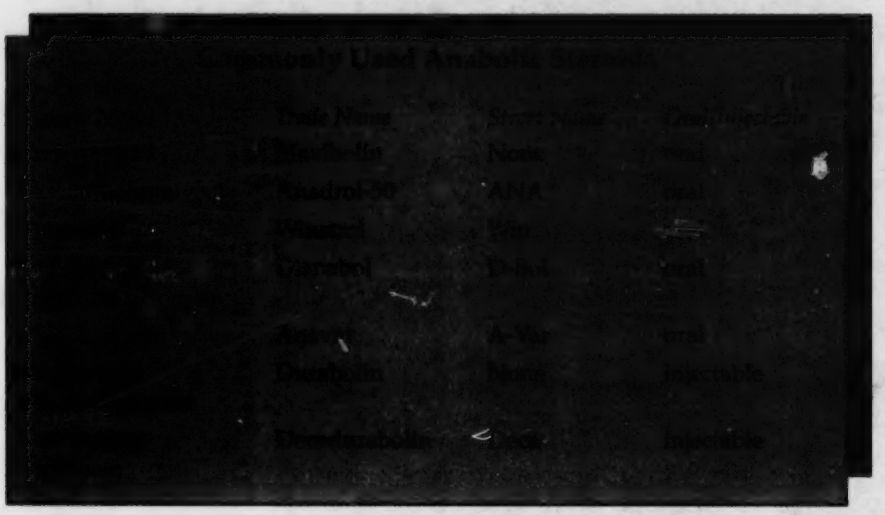

Messages That Encourage Steroid Use
• Younger and younger students are pursuing sports excellence. The concept of "sports as fun" is being superseded by "sports as big business"; e.g. basketball camps, Little League.
• A spirit of "winning at all costs"
• Over-emphasis on physical attributes for feelings of self-worth
• Eagerness to gain a competitive edge over one's opponent
• Endless search for shortcuts - instant gratification vs. long-term goals
• Valuing money and appearance above health
• Broad acceptance of drugs to solve problems and achieve quick results
• Financial rewards which may accompany winning for the successful athlete, coach, school, and professional team.

VI. HOW STEROIDS ARE USED

Presently, there are about 15 anabolic steroids that are used in the United States. Steroids are either injected into the muscle tissue or taken orally. Steroids which are injected generally are oil based and have a longer lasting effect. Those which are taken orally have a more immediate effect; however, they appear to be more damaging to the liver. Whereas injectable steroids are metabolized over a period of weeks, orally ingested steroids are metabolized by the liver in about 24 hours.

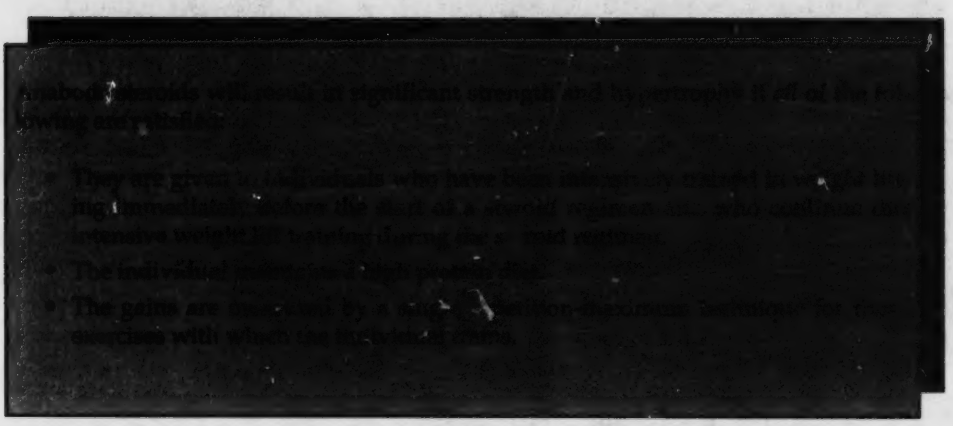
Steroid abusers usually use *stacking* or *pyramiding* techniques during a steroid *cycle*. During a 12-week cycle, an individual may begin with low doses of one steroid. As the cycle progresses, additional steroids are "stacked" and doses are increased. During approximately the fifth through seventh weeks the use of these drugs will peak. [4] During this peak, megadoses of steroids are being used. These steroids, when stacked, often produce over 100 times the medically approved dosage. [5] After the seventh week, abusers gradually reverse the pyramid and stacking procedure. When the

12-week cycle is completed, abusers will observe a four to eight week drug-free period called a *drug holiday*. Usually this drug holiday occurs just prior to a competition. During this time it is common for this newly acquired size and weight to decrease. Hence, it is usual for abusers to lengthen a cycle and shorten the drug holiday.



Strength and Hypertrophy Gains

Several controversies exist regarding steroid use. The first controversy is whether or not anabolic steroid treatments can cause abnormally rapid strength and *hypertrophy*. In 1984, Haupt and Rovere evaluated 24 well-documented studies on the effects of anabolic steroids on strength, hypertrophy, and athletic performance.[6] Based on this review, the authors stated that anabolic steroid treatments in normal young males were capable of causing abnormally rapid increases in strength, muscular hypertrophy, and *lean body weight*, if accompanied by intense strength training before and during the steroid treatment, a high protein diet, and if the strength changes are measured with single repetition maximum techniques. In 1987 these findings were accepted by the American College of Sports Medicine.

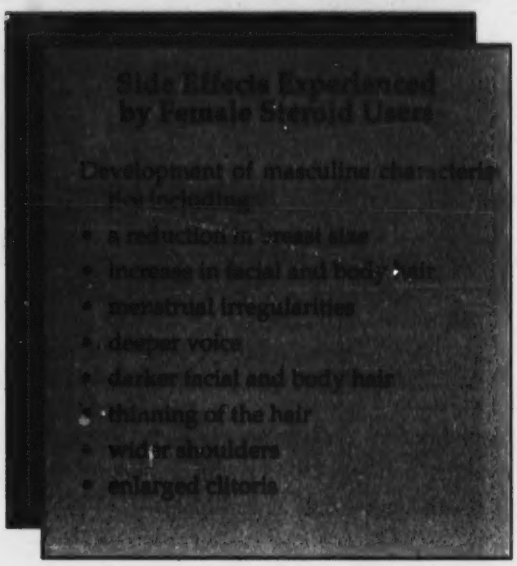


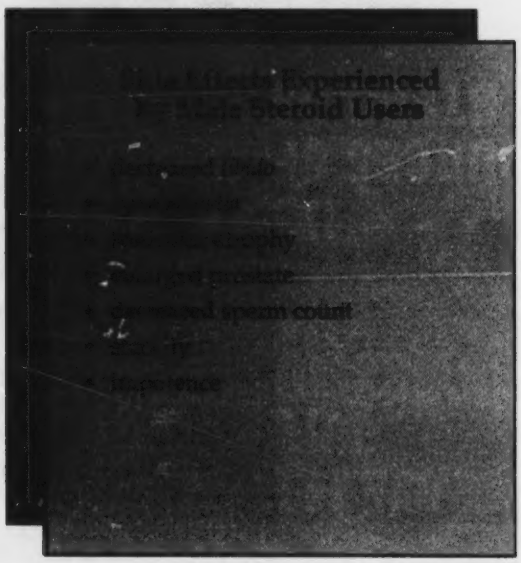
VII. RISKS AND SIDE EFFECTS

Many of the studies regarding steroid use have been too short in duration or conducted with dosages much lower than many users would take. Additionally, the use of human subjects in studies of this type, exposing them to extreme dosages of steroids for long periods, similar to that used by many athletes, cannot be defended. Hence, the side effects demonstrated by the controlled research are probably not indicative of the true potential for the irreversible side effects that may result from consistent heavy use of steroids.

Even with such limitations, a host of negative side effects have surfaced. Although the majority of these side effects appear to reverse themselves when anabolic steroid treatments are discontinued, some, especially those affecting the female, appear to be irreversible.

The side effects of steroid use in females is often immediate and irreversible. Women begin to develop masculine characteristics, including a shrinkage of the breast tissue, increased facial and body hair, and menstrual irregularities. After a period of approximately six months, females can expect deeper voices, darker facial and body hair, thinning of the hair leading to baldness, wider shoulders and changes in skin color. Women also commonly experience clitoral enlargement which is irreversible, and female infants of mothers on steroids have grown external genitals similar to the male scrotum. Because of the irreversible nature of these side effects, the female pays a high price for the small increase in muscle size and strength.


Side Effects Experienced
by Female Steroid Users
Development of masculine characteristics
including:
• a reduction in breast size
• increase in facial and body hair
• menstrual irregularities
• deeper voice
• darker facial and body hair
• thinning of the hair
• wider shoulders
• enlarged clitoris

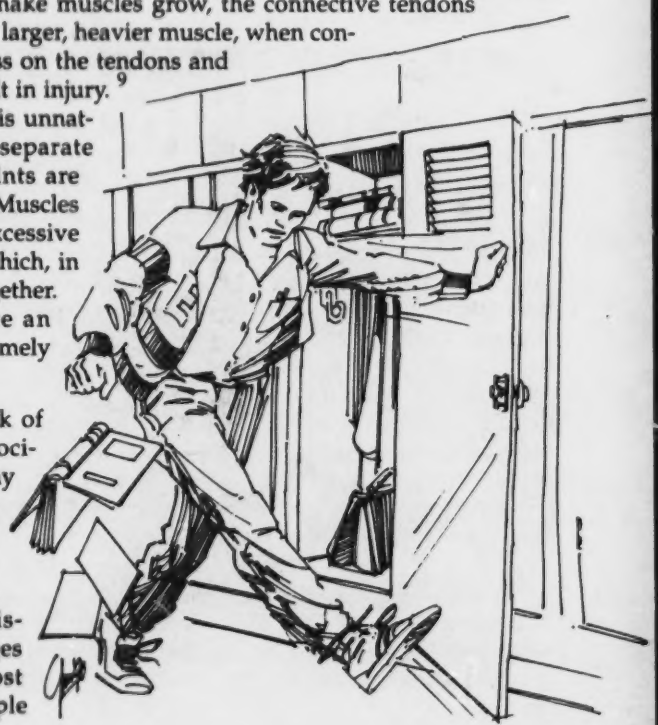


Additionally, people who take high doses of steroids may experience a variety of emotional and psychological changes. Users often report feelings of irritability and aggression. These changes are sometimes referred to in the literature as "roid rage". During these periods, situations that normally would not bother an individual can, with steroids, create strong feelings of anger and hostility. People who take steroids often have difficulty with others because of these uncontrolled feelings. Unfortunately, many times these feelings are expressed through some type of physical violence. Anxiety, paranoia, and disturbed sleep patterns have also been reported by many steroid users.[7]

Additional Risks of Steroid Use

Although the use of steroids by healthy individuals is a relatively new phenomenon, there is little doubt in the medical community that the repeated intake of anabolic steroids places the user at an increased risk for medical problems. Clearly, the risks associated with long-term steroid use are not worth the short-term benefits. The specific patterns of these difficulties depend upon the sex and age of the user, and the specific drug taken, including the dose and length of use.

In addition to the short term side effects and the long-term consequences of consistent steroid use, there are other problems to contend with, specifically, steroid related injuries and suppression of the immune system.[8] Although anabolic steroids tend to make muscles grow, the connective tendons and ligaments do not. This larger, heavier muscle, when contracted, may put extra stress on the tendons and ligaments, which may result in injury.[9] Additionally, because of this unnatural growth, the cartilage that separate and liberates the bones and joints are more likely to become arthritic. Muscles that are too heavy will cause excessive wear and tear on the cartilage which, in turn, results in bones rubbing together. Bones that rub together create an arthritic condition which is extremely painful.



Often overlooked is the risk of contracting AIDS, which is associated with injectable steroids. Any time needles and syringes are shared, the individuals sharing these *works* are at an increased risk for contracting AIDS, hepatitis, or other blood- borne diseases. Since needles and syringes are not readily available to most people in New York State, people

who use injectable forms of the drugs are often forced to share needles and syringes. This practice places the individual at an increased risk for contracting a disease.

Long-term use of these drugs appears to jeopardize the natural functioning of the *hepatic*, cardiovascular, and reproductive systems. The *hepatic* system is severely distressed by steroid use, especially when steroids are taken orally. One study reported that cysts and liver tumors, which are rare in the general public, were found in 59 of 155 steroid users. Several deaths have also been reported as a result of steroid-related liver failure.[10] Although strong scientific evidence is just beginning to appear in the literature, early studies seem to indicate that steroids are devastating to the heart. Several studies have shown that steroid use results in a significant reduction of high density lipoproteins (HDLs) in the blood. High density lipoprotein play a critical role in removing plaque from the walls of the arteries. [11] A reduction of HDLs increases the risk for developing atheroscelerosis. Enlarged hearts, and high blood pressure have also been associated with steroid use. [12] In the lay press there have been several articles highlighting individuals who attribute the early onset of cardiovascular disease to steroid use.

The reproductive system is also affected by consistent steroid use. [13] Testicular *atrophy*, accompanied by a reduction in sperm production, can be regarded as a pathologic side effect. There is also a reduction in seminal fluid volume which may be a result of a dysfunctional prostate gland. [14]

Several studies have documented the long-term effects of steroid use during adolescence. One of the problems associated with steroid use during adolescence is the premature closure of the *epiphyses* of the long bones. Once these plates close, growth permanently ceases. [15]

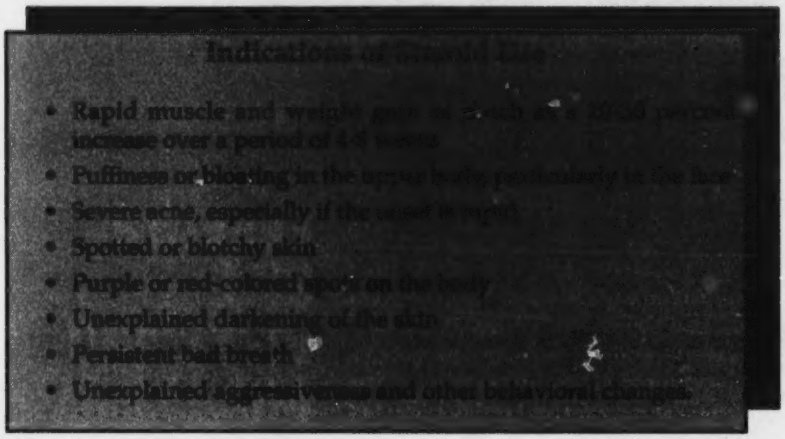
Steroids and Addiction

The addictive qualities of steroids are beginning to gain attention in the literature. Although steroids have been used by some individuals for long periods of time, addiction to steroids has not been recognized. However, according to the American Psychiatric Association (1987) chronic abuse of anabolic steroids parallels the commonly accepted criteria for psychoactive substance use disorder. [16] In many cases: (1) the hormones are used over longer periods than desired; (2) attempts are made to stop use without success; (3) substantial time is spent obtaining, using, or recovering from the drug; (4) use continues despite knowledge of significant psychological problems caused by the hormones; (5) characteristic withdrawal symptoms occur; (6) the hormones are often taken to relieve these withdrawal symptoms.

VIII. SIGNS AND SYMPTOMS OF STEROID USE

Unless an individual has tested positive through urinalysis, one cannot be sure that the person has been taking steroids. However, there are several signs that may indicate that steroids are being used.

Athletes who use steroids in conjunction with a weight training program may be identified by their quick muscle and weight gains. A person who gains 20-30 percent in body weight in a relatively short time (four to eight weeks) should be suspected. [17] Due to an increase in water retention, the individual may appear to have a bloated or puffy face and upper body. Another indication of steroid use is severe acne, especially if the onset is rapid. Other symptoms may include spotted or blotchy skin, purple or red-colored spots on the body, severe sweating (even at rest), unexplained darkening of the skin, and persistent bad breath. Behavioral changes may also be an indication of steroid use, especially unexplained aggressiveness and overreaction to incidents which would usually be ignored. However, do not assume that an individual is using steroids until you know all the facts.


Indications of Steroid Use
Rapid muscle and weight gain (as much as a 20-30 percent increase over a period of 4-8 weeks)
Puffiness or bloating in the upper body, particularly in the face
Severe acne, especially if the onset is rapid
Spotted or blotchy skin
Purple or red-colored spots on the body
Unexplained darkening of the skin
Persistent bad breath
Unexplained aggressiveness and other behavioral changes

IX. SOURCES OF STEROIDS

Although anabolic steroids are produced and distributed by pharmaceutical companies in the United States, the demand for these drugs has spawned a black market. The majority of these black market drugs are produced in Mexico and European countries.

Many of these black market drugs are counterfeits, developed in underground laboratories containing unknown or inappropriate ingredients, and they are frequently manufactured in substandard environmental conditions. Often, these counterfeit drugs are packaged with deceiving labels that lead the buyer to believe that the drugs were manufactured by legitimate companies.

Steroid users and dealers typically "connect" in private gyms and fitness centers where weight lifting occurs. Steroids are often distributed to athletes by other athletes, and, in some cases, coaches. Nearly 20 percent however, obtain the drugs from health care professionals, including doctors, pharmacists, and veterinarians.

As in recreational drug use, the peer group has a strong influence in introducing the individual to steroids. Individuals who use steroids subtly form cliques which distance themselves from nonusers. People who choose not to take steroids will not be included in this steroid-taking clique. This socialization process, which occurs within this group, and the easy access to these drugs adds to the severity of the problem.

THE STEROID TRAIL:

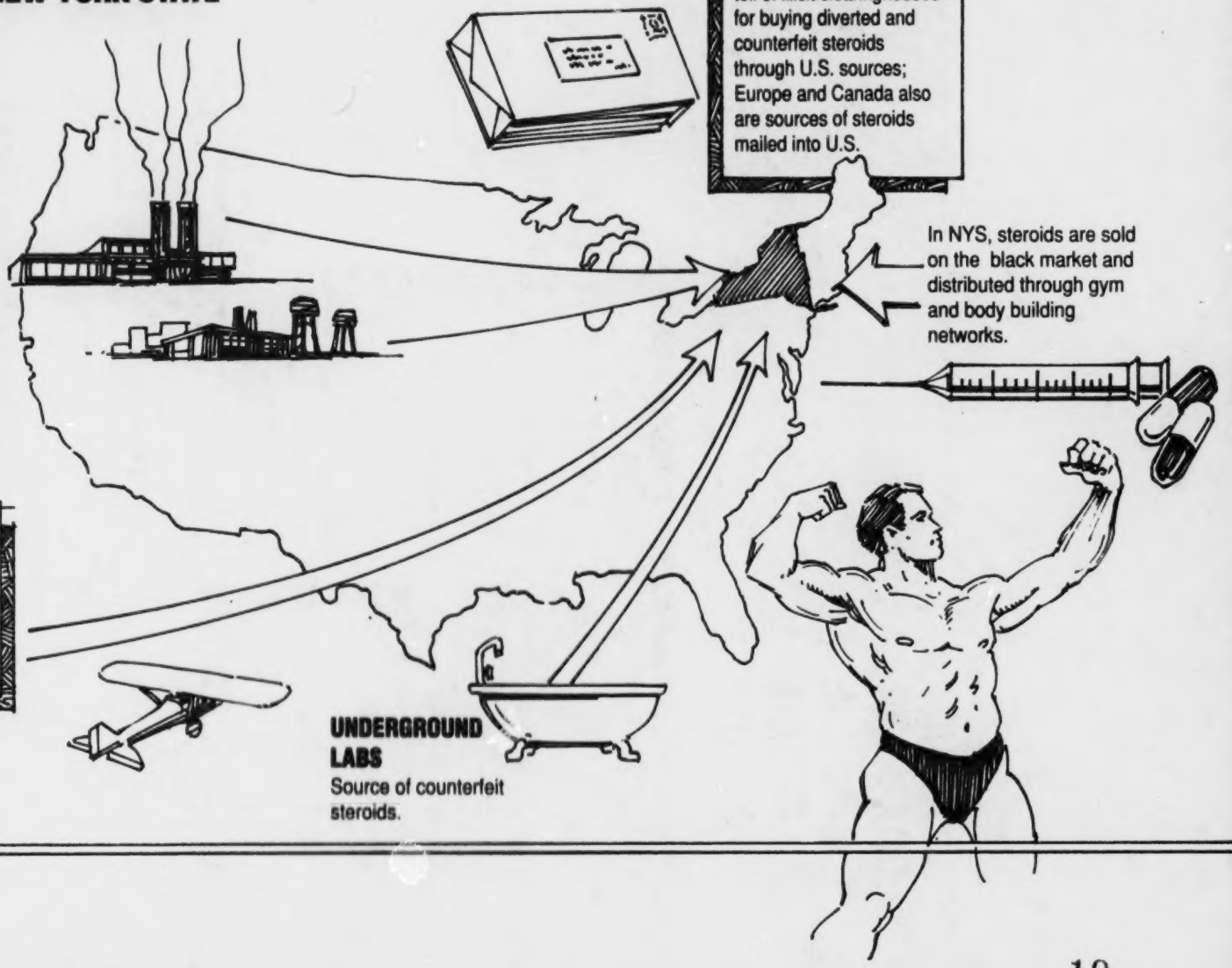
HOW THE DRUGS REACH NEW YORK STATE

DRUG DIVERSION

Product is stolen or diverted from legitimate manufacturing and wholesale channels onto the black market where it's distributed through dealers in gyms.
Physicians, pharmacists and salesmen divert samples or other supplies onto the black market.

SMUGGLING

Underground labs in Mexico produce counterfeits and smuggle across border through U.S. connections. Pharmacies sell to visitors who take across border into U.S.



MAIL ORDER

Underground publications tell of illicit clearinghouses for buying diverted and counterfeit steroids through U.S. sources; Europe and Canada also are sources of steroids mailed into U.S.

In NYS, steroids are sold on the black market and distributed through gym and body building networks.

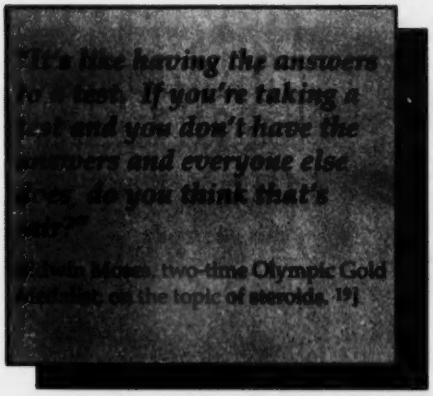
UNDERGROUND LABS

Source of counterfeit steroids.

X. LEGAL AND ETHICAL ISSUES

Most experts on the steroid topic agree that two things are needed to help solve the problem of steroid use. One is education. The other is the development of stronger laws controlling the sale and availability of steroids.

New York State became the 10th state to pass legislation concerning steroids. The Controlled Substance Steroid Law went into effect January 12, 1990. [18] The intent of the law is to regulate the use of anabolic steroids. It seeks to place a greater responsibility on physicians and pharmacists in dispensing steroids. Under this law, steroids become a Schedule II drug in New York State. Physicians and pharmacists who dispense steroids for nonmedical reasons face Class C felony charges with the term of imprisonment ranging from 1 to 15 years. Any other person distributing steroids under the Controlled Substance Steroid Law will be committing a Class D felony with accompanying terms of imprisonment ranging from one to seven years. Possession of steroids is a Class A misdemeanor which carries a penalty of up to one year in jail plus a fine. The law clearly includes coaches, gym personnel, athletic trainers and any other person engaged in unlawful distribution or use of steroids. All students and coaches should be well aware of this law and the penalties it imposes.


"It's like having the answers to a test. If you're taking a test and you don't have the answers and everyone else does, do you think that's fair?"
Edwin Moses, two-time Olympic Gold medalist, on the topic of steroids. [19]

It is also important to note that the National Collegiate Athletic Association (NCAA), the United States Olympic Committee (USOC), and the National Federation of State High School Associations (NFSHSA) have gone on record in opposition to the use of steroids. Violation of these prohibitions carries penalties such as loss of team eligibility and forfeiture of awards won.

In today's society, many individuals are influenced by a pervasive "win at all costs" attitude. This mentality is often promoted by coaches and communities. Competition, to some, has no value if the final score does not indicate a victory.

Steroid use to gain an advantage over an opponent is not only physically and mentally harmful, it is unethical. It is the equivalent of cheating to gain an advantage over an opponent. At risk is not only the integrity of competition but also the overall self-respect of the athlete.

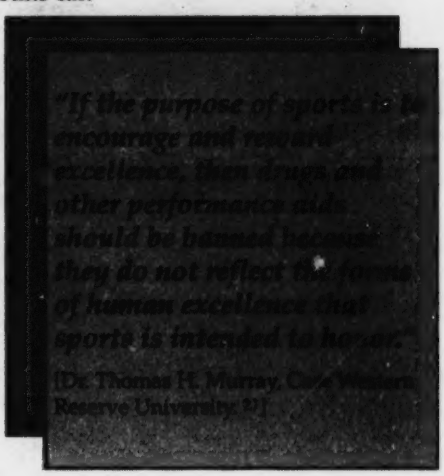
It is important that all athletic programs be administered by educators who value the benefits of competition and will insure that students have the opportunity to gain these benefits through programs that are not only fair and equitable in every way, but also programs that are drug-free.

XI. TESTING

One of the most controversial areas surrounding the topic of steroid use is drug testing. The decision of whether or not to test individuals for specific drugs should be made only after considerable study. Issues that complicate drug testing include legal ramifications, cost of testing, and the reliability of testing procedures.

Steroid testing is usually done through urine samples, although blood samples and hair samples may be used. The most common, urine testing, is done through gas chromatography/mass spectrography (GCMS). The GCMS procedure is the only technique which provides legally admissible data. In this process, steroids are

extracted from the urine, are separated from one another, and characterized by ions. Since steroid molecules are not found in nature, the tests are accurate, but the laboratory technician must be highly skilled. Two urine samples are needed for a positive confirmation. Using the GCMS procedure, steroids can be detected in one part per billion up to nine months after use. The cost range is $100 to $150, and test results can be received in two day to six weeks There are currently six centers in the U.S. which currently use GCMS. [20]


"If the purpose of sports is to encourage and reward excellence, then drugs and other performance aids should be banned because they do not reflect the forms of human excellence that sports is intended to honor."
[Dr. Thomas H. Murray, Case Western Reserve University, 8]

Although almost everyone agrees that drug-free competition is desired, drug testing to help achieve drug-free competition is highly controversial. Organizations must study and answer some very basic questions including who will develop drug testing policy; who will implement this policy; who will be tested; what drugs will be tested for; and what consequences will occur in the event of positive results. If a testing program for drugs is to be adopted, it should not be designed and used for punitive reasons. The choice to test must be coupled with a strong, comprehensive and ongoing drug prevention, education and rehabilitation program.

Drug testing is currently being conducted by the NCAA, U.S. Olympic Committee and some high schools. Legal challenges are being met on all levels and it is still unclear as to the legality of testing. The American Civil Liberties Union (ACLU), which opposes drug testing in principle, claims that drug testing is degrading, an invasion of privacy, an illegal search and in opposition to the 4th Amendment to the United States Constitution.

Almost all institutions involved in drug testing operate under the policy of informed consent. In high schools where drug testing is conducted, the student and parent/guardian must sign a waiver which indicates they understand the drug testing program and freely consent to participate in it and undergo all required tests. Most programs offer counseling to offenders. Many proponents of drug testing claim that testing has become a way of life in many businesses, the military, and government, and that an attempt to prohibit drug testing in athletic competition is unwarranted. Some people are of the opinion that drug testing places an unfair focus on athletes and that their constitutional rights are being violated.

XII. THE ROLE OF SCHOOLS IN ADDRESSING STEROID USE

Every school needs to have a comprehensive policy concerning alcohol and other drugs, including steroids, with specific guidelines related to interscholastic athletes. The policy and the procedures must be communicated to and well understood by everyone.

Education is the main objective in fighting the problem of steroid use and needs to be targeted, not only towards students, but to parents, teachers, and coaches as well. Training of staff in steroid education is critical. Administrators, health and physical education teachers, counselors, and coaches must receive training to enhance their knowledge of steroids, including prevention and intervention strategies. The prevention activities of all these groups need to be coordinated to insure that students are receiving consistent messages.

Health and physical education teachers play a key role in steroid education and prevention. They have a significant responsibility in providing accurate factual information on steroids and in helping students develop a positive self-image and appro-

priate life skills to resist the pressures to use steroids. Decision-making and stress management techniques, as well as positive alternatives to all chemical use, are key elements in any prevention program.

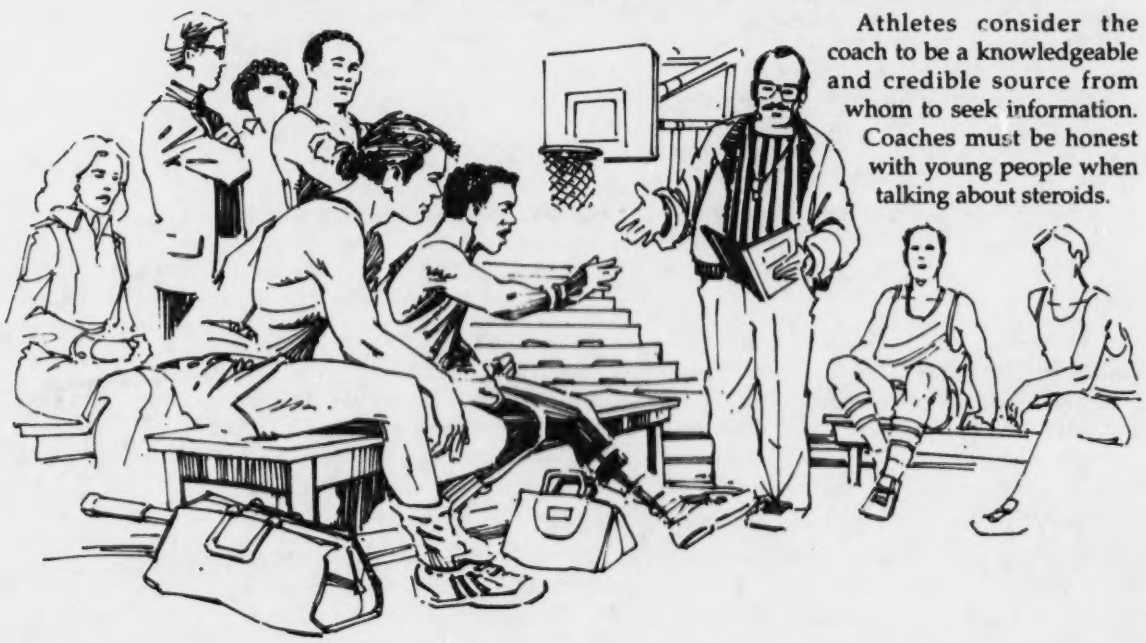
Steroid education should be incorporated into existing broad-based prevention efforts which reflect a student's whole environment of school, home, and community. Parents need to be educated and involved so that they understand the powerful role modeling they exhibit and to help them reinforce at home the school-based prevention efforts.

It is important that parents, students, school administrators, teachers, coaches and community members unite in developing attitudes, actions and activities that enable every child to perform at his/her own peak performance level through sensible nutrition, physical training, and positive reinforcement.

Role and Influence of the Coach

Coaches traditionally have been responsible for the physical, mental, emotional and social well-being of athletes. Coaches also retain control over those areas associated with improving athletic performance. However, a factor that extends beyond a coach's control, and may have a significant effect on an athlete's performance, is drug abuse.

For the coach to successfully address the issues associated with drug use and abuse, the coach must understand why athletes take drugs, recognize the signs and symptoms associated with drug use, establish and uphold policies regarding the use of drugs, and work to develop and implement substance abuse prevention programs.



Athletes consider the coach to be a knowledgeable and credible source from whom to seek information. Coaches must be honest with young people when talking about steroids.

Many times young people are given the impression that it is only the lack of size andstrength that is keeping them from their potential. These impressions, no matter what the original intention, may be all the encouragement an individual needs to start using steroids.

To avoid sending mixed messages, coaches must take a stand against steroid use. Silence, many times, is perceived as condoning use. Regardless of the coach's personal or professional experience with this type of drug, policies must be established and maintained that discourage the use of all *ergogenic* aids. The ethical, and legal implications, along with the potential for future health problems associated with these drugs, must be contrasted to the minimal benefits to be gained from their use.

When firm guidelines are established at the onset of a program, athletes are at an advantage when refuting the persuasive arguments that they are likely to encounter from others who attribute their successes to using steroids. Four simple reasons for not using steroids are: (1) there are potentially severe and health damaging risks involved; (2) to use is to cheat; (3) if they are caught there will be negative consequences; and (4) they are illegal. Knowing that steroid use is unacceptable and that there will be negative consequences are often the only reasons an individual needs to save face when the opportunity to use steroids presents itself. Whereas highly successful performers learn from their mistakes and put their errors behind them, most athletes feel extreme stress after performing poorly or below the expectations of the coach, parents, teammates, or even failing to meet their own expected level of performance.

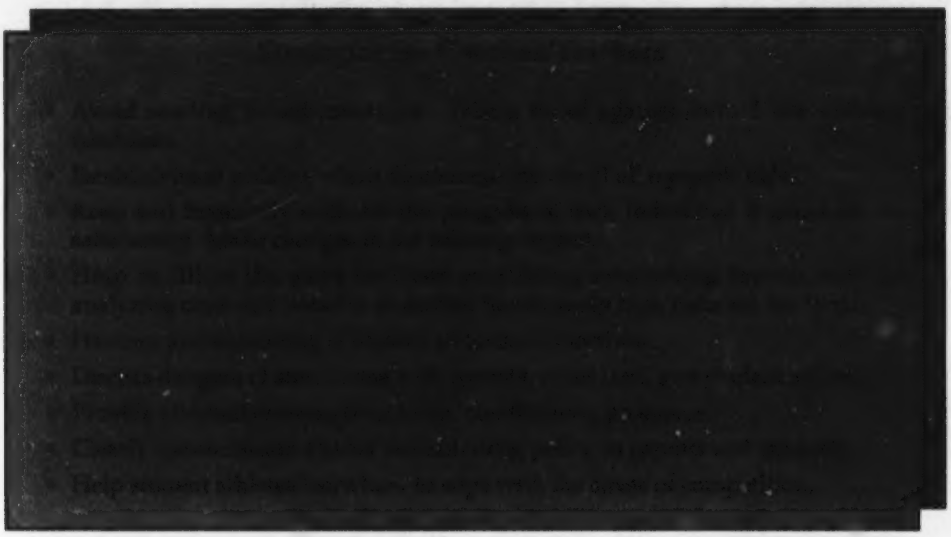
Coaches must be mindful that, in spite of all that is known about the human body and exercise physiology, individuals respond differently to identical predesigned programs. Records of progress should be evaluated frequently. If the athlete feels that the program is ineffective in producing the desired results, the coach should assure the athlete that changes in the weight training regime will be made in an attempt to produce the desired effects.

Adolescents often lack the skills in judgment as it relates to their future. They see the avenues taken by others to attain success, which may blind them to the fact that drug use is risky business. Coaches can fill in the gaps between sacrificing everything for success and analyzing cost and benefits so that no inordinately high risks are involved. Coaches play a vital role in serving as role models for athletes at a time when the pressures to experiment with illegal drugs are the greatest. A coach's leadership skills should be used to create a drug-free environment. Coaches need to enforce the school's drug policy as well as being aware of the signs and symptoms of alcohol and other drug abuse. Most importantly, coaches need to set an example by being drug-free themselves.

Coaches play a critical role in assuring that participation in sports is constructive, rather than destructive, depending on whether the involvement leads to personal growth, well-being, and maturity of character or whether it leads to human problems and the diminishment of character and optimal health.

"IF YOU'RE GOOD ENOUGH - YOU'RE BIG ENOUGH"

Woody Hayes, former football coach, Ohio State



The Role of School Counselors and Substance Abuse Professionals

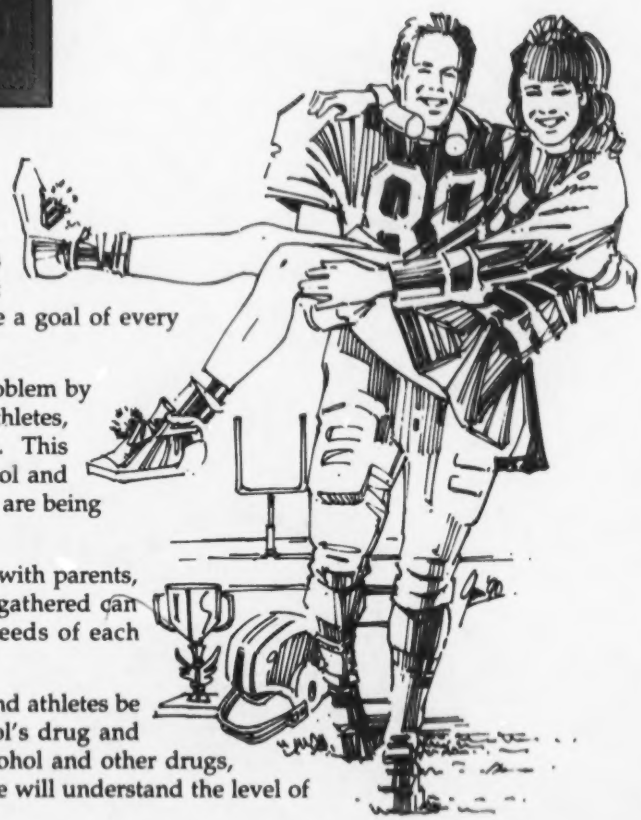
School counselors have a significant role to play in the school's response to anabolic steroid use among students. The counselor or substance abuse professional should be involved in prevention programs for steroid abuse and needs to provide direct counseling, assessment and referral services.

Counselors can insure that prevention efforts focus on the underlying ethical implications of steroid use - specifically "fair play" vs. "win at all costs". These psychosocial conflicts should be explored from personal and social dimensions, incorporating perspectives of the team, peers, coaching staff, and parents, all of whom play critical roles in the resolution of this dilemma.

Role of Students

Students need to know all the facts about steroid use in order to make healthy individual choices and to be positive role models for others. It is important that they discuss steroid use with teammates, coaches, parents and friends. Early decision-making will be helpful in avoiding having to make on-the-spot decisions. Students need to make up their mind ahead of time about what they hope to accomplish through sports, then choose to go the extra mile in athletics, without the use of any chemicals, including steroids. Students can achieve their goals through training; positive mental imaging and conditioning; the support of coaches, teammates and family; a healthy lifestyle; and personal dedication.

Drug-Free Interscholastic Teams



Creating programs that are drug-free will be a challenge for every school. How well schools accept this challenge will determine the well being of their student population. Striving to have drug-free teams should be a goal of every school and community.

It is important to identify the extent of the drug problem by conducting a needs assessment. A survey of students, athletes, coaches and parents can provide valuable information. This survey may address: the number students using alcohol and other substances, including steroids; the substances that are being used; and the frequency of use.

It is important that results of this survey be shared with parents, coaches and the community. The information that is gathered can also be used to develop a program that meets the needs of each school.

It is recommended that team meetings for parents and athletes be held before each season. At these meetings, the school's drug and alcohol policy should be explained. The dangers of alcohol and other drugs, including steroids, should be discussed, so that everyone will understand the level of

commitment needed for the promotion of drug-free teams. Many schools are asking not only athletes, but parents and coaches as well, to remain drug-free as part of their overall commitment to a drug-free program.

Athletic team captains have a great responsibility in insuring that their team is drug-free. Special training sessions should be provided to assist them in handling their responsibilities. Intervention programs, including counseling, need to be in place for students who are identified as violating school policies.

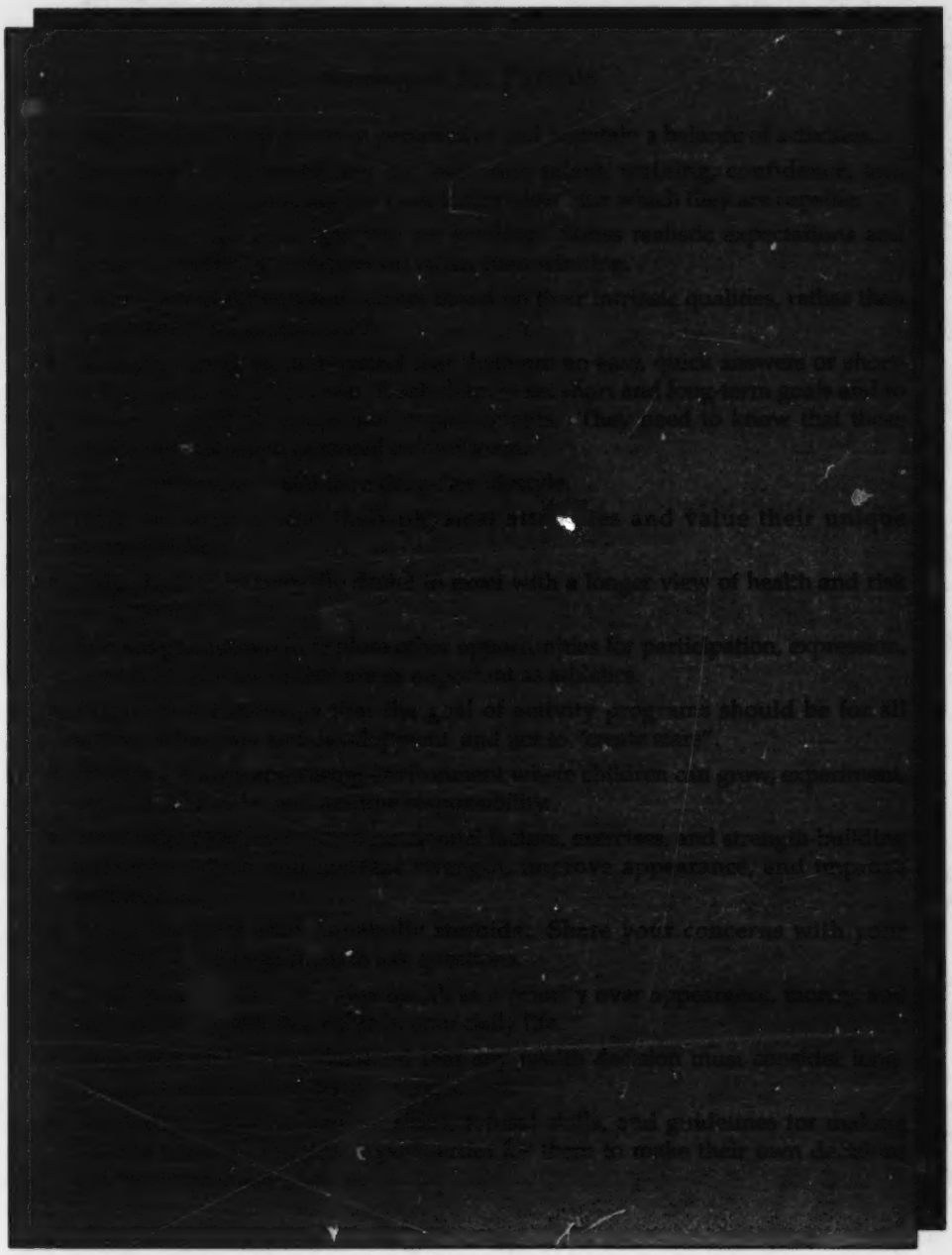
Training Environment

Those involved in the training of athletes encourage them to train hard to become maximally fit. Schools are encouraged to have weight rooms and training facilities, staffed by trained educators, to help students achieve these gains. Many students discover steroids and receive misinformation about these drugs from people they come in contact with outside of school. [22] By having adequate facilities available for students on school property, proper training can be encouraged. Students exhibiting any signs of steroid use may be identified and receive counseling and other intervention services, according to school policy and procedure.

XIII. THE ROLE OF PARENTS IN THE PREVENTION OF STEROID USE

From the earliest years, parents have a primary role in promoting healthy attitudes and lifestyles in their children and in helping them understand the appropriate role of sports in their lives. Through positive role modeling, parents can promote enjoyment and personal growth in athletics through fair competition, rather than the goal of winning at all costs. Parents can help children build their self-image based on their intrinsic worth and unique characteristics and avoid an overemphasis on physical attributes and performance.

The following suggested prevention strategies for parents can be used as discussion topics for preseason meetings and for other parent education programs on steroid education and the role of parents in prevention.



Appendix A

GLOSSARY

Anabolic-androgenic steroids - chemical derivatives of the male sex hormone testosterone. "Anabolic" means that they help to build muscles or other tissues in the body. "Androgenic" refers to their ability to help the body to develop male sex characteristics. Although many of these drugs have a relatively high anabolic-androgenic ratio, it is impossible to completely separate these two characteristics.

Atrophy - degeneration or wasting of a cell or organ of the body

Catabolic state - a condition brought about by intense training which cause the release of glucocorticosteroid and a substantial increase in nitrogen utilization. This condition may explain why some people experience a plateau in their training.

Corticosteroids - a family of potent, versatile hormones originating mainly in the adrenal glands, used therapeutically to treat inflammatory and allergic diseases. A corticosteroid can be produced naturally in the adrenal glands or synthesized in the laboratory

Cycle - the taking of steroids for 6 to 12 weeks, then staying off them for an equal amount of time before beginning another "on" cycle

Drug Holiday - a period of four to seven weeks where the individual is drug free. During this time, however, size and weight often decrease.

Edema - an abnormal accumulation of fluid in intercellular spaces of the body

Epiphyses - growth plates of the long bones. When steroids are used these plates tend to prematurely close in adolescents resulting in a permanent short stature.

Ergogenic aids - the use of any substance to enhance performance. In terms of sports, drugs can be divided into two categories: ergogenic aids (stimulants, anabolic steroids, nutritional supplements, and blood doping) and performance continuing drugs (narcotic analgesics and substances such as dimethylsulfoxide, DMSO).

Gynecomastia - the development of female breast tissue in the male pectorals

Hepatic - pertaining to the liver

Hereditary angioedema - a type of allergic reaction and some insect bites, foods, viruses, etc.

Hypertrophy - increase in muscular development

Lean Body Weight - the weight of an individual excluding adipose tissue

Libido - the emotional desire to have sex

Masking - various methods used to avoid the detection of ergogenic aids

Osteoporosis - a condition affecting the elderly, especially elderly women, resulting from a decline in bone mineral content, thus making bones susceptible to fracture

Plateauing - the leveling off of the effect of a steroid or steroids

Pyramiding - beginning with a low dosage of one steroid. Dosage is increased and other steroids are started.

Stacking - taking more than one anabolic steroid at a time for their multiple effects

Staggering - avoiding the plateauing of stacked drugs by stopping one drug, then going on to another

Tapering - gradually reducing steroid use over a period of four to six weeks

Testosterone - the male sex hormone

Urethritis - inflammation of the urethra, the passage through which urine is discharged from the bladder.

Works - the needles, syringes, and other paraphernalia used to inject illicit street drugs

Appendix B

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Appendix C

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Suggested Audiovisuals

Benny and the "Roids" - A Story About Steroid Use. Coronet/MTI Film and Video, 108 Wilmot Road, Deerfield, Illinois 60015, 1-800-621-2131.

Body Building, Body Breaking. 1988. Disney Educational Publications and Learning Corporation of America, Deerfield, Illinois. Coronet. MTI Video.

Champions at Any Price. Ross Laboratories, Department 436, P.O. Box 1317, Columbus, Ohio 43272-4177, (614) 227-3315, 22 min., $10.00 each.

Downfall: Sports & Drugs. 1988. Free loan, NCADI. Rockville, Maryland 20852, (301) 468-2600. 29 min., grades 7-12.

Eating for the Long Run. Ross Laboratories, P.O. Box 1317, Columbus, Ohio 43272-4177.

Enhancing Performances: The Role of Nutrition in Athletics. Ross Laboratories, P.O. Box 1317, Columbus, Ohio 43272-4177, (614) 227-3315. $10.00 each.

Sports Psychology: The Winning Edge in Sports. Target order Dept., P.O. Box 20626, 11724 Plaza Circle, Kansas City, Missouri 64195. 1-800-366-6667. $90.

Steroids & Sports. 1987. Films for the Humanities and Sciences, Inc., Princeton, New Jersey.

Steroids: Crossing the Line. 1986. Films for the Humanities and Sciences, Inc., Princeton, New Jersey.

Steroids: Dream Drug or Nightmare. All-Media Productions, Michigan Substance Abuse and Traffic Safety Information Center, Grand Rapids, Michigan.

"Steroids: Shortcuts to Make Believe Muscles." Charles Chic Thompson. Film Ideas, 3575 Commercial Avenue, Northbrook, Illinois 60062, 1988, 32 min., $150 Rental 60, Ages 14 to adult.

The Rally. Video for Preseason Meetings for Athletes/Parents Target order Dept., P.O. Box 20626, 11724 Plaza Circle, Kansas City, Missouri 64195. $51.

Appendix D

STATEWIDE RESOURCES

STATE EDUCATION DEPARTMENT

Division of Pupil Health and Fitness
John Fabozzi, Director

Bureau of School Health Education and Services
Rebecca Gardner, Chief

Drug-Free Schools and Communities Act Program
Jacquee Albers, Associate in School Health Education, Program Director
Teri Barber, Assistant in School Health Education, Program Manager
Evelyn Bernstein, Assistant in School Health Education, Program Manager
Gail Harding, Assistant in School Health Education, Program Manager
Warren Kilmer, Associate in School Health Education, Program Manager
Chike Nnabugwu, Assistant in School Health Education, Program Manager
Walter Szwetkowski, Assistant in School Health Education, Grants Manager
Betsy Thompson, Assistant in School Health Education, Program Manager
Theodore Wolfstich, Assistant in School Health Education, Program Manager
Room 964 EBA
Albany, NY 12234
(518) 474-1491

Regional Drug Education Centers

Western New York
Cynthia Knowles, Regional Coordinator
Livingston-Steuben-Wyoming BOCES
Lackawanna Avenue
Mt. Morris, New York 14510
(716) 658-2291

Serving schools in the counties of Allegany, Cattaraugus, Chautauqua, Erie, Genesee, Livingston, Monroe, Niagara, Ontario, Orleans, Seneca, Steuben, Wayne, Wyoming, Yates.

Central New York
Cynthia Rydelek, Regional Coordinator
Onondaga-Cortland-Madison BOCES
P. O. Box 4754
Syracuse, New York 13221
(315) 433-1536

Serving schools in the counties of Broome, Cayuga, Chemung, Chenango, Cortland, Delaware, Herkimer, Jefferson, Lewis, Madison, Oneida, Onondaga, Oswego, Otsego, Schuyler, Tioga, Tompkins

Northern New York
Beth Rodman, Regional Coordinator
Albany-Schoharie-Schenectady BOCES
Regional Planning Center
47 Cornell Road
Latham, NY 12110
(518) 786-3211

Serving schools in the counties of Albany, Clinton, Columbia, Essex, Franklin, Fulton, Greene, Hamilton, Montgomery, Rensselaer, St. Lawrence, Saratoga, Schenectady, Schoharie, Warren, and Washington.

Southern New York
Isabel Burk Mazzenga, Regional Coordinator
Putnam No. Westchester BOCES
Health Education Center
Yorktown Heights, New York 10598
(914) 245-2700 ext. 454, 455

Serving schools in the counties of Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester

Long Island
Constance Wecker
Suffolk 3 BOCES
Kellum Street School
887 Kellum Street
Lindenhurst, New York 11757
(516) 884-1000

Serving schools in the counties of Nassau, Suffolk

New York City
Rafael Lozada, Regional Coordinator
New York City Office of Substance Abuse
110 Livingston Street
Brooklyn, New York 11201
(718) 935-3252

Serving schools in the boroughs of Manhattan, Queens, Bronx, Brooklyn & Staten Island

Bureau of Physical Education and Safety Education

Frank Beyer, Associate in Safety Education
Donald Lindell, Associate in Physical Education
Bernard Hungerford, Associate in Physical Education

Health Education and Services Network

John Quinn, Associate in School Health Education, State Health Coordinator
Room 978 EBA
Albany, NY 12234
(518) 474-3796

Division of Civil Rights and Intercultural Relations
Dennis L. Glover, Supervisor
Room 471 EBA
Albany, NY 12234
(518) 474-3934

Office of Education of Children with Handicapping Conditions
Thomas B. Neveldine, Assistant Commissioner
Room 1061 EBA
Albany, NY 12234
(518) 474-5548

DIVISION OF SUBSTANCE ABUSE SERVICES (DSAS)

Bureau of Prevention and Education Services
Executive Park South
Albany, NY 12203
(518) 457-5840

STEROID EDUCATION TRAINING CONSULTANTS

Sandra Scott, Executive Director
ACTION on TARGET
(Statewide Training Network)
New York State Public High School
Athletic Association
88 Delaware Avenue
Delmar, NY 12054
(518) 439-8872

Judy Shelton
Statewide Coordinator
ACTION on TARGET
Webster Central School
Webster, NY 14580
(716) 671-1880

Bernard J. Leiker
Substance Abuse Program Specialist
Williamsville East High School
151 Paradise Road
East Amherst, NY 14051
(716) 689-7091

Michael Mammoliti
Williamsville Central School
415 Lawrence Bell Drive
Williamsville, NY 14221
(716) 626-8037

James Rusin
Williamsville Central School
415 Lawrence Bell Drive
Williamsville, NY 14221
(716) 626-8037

MaryLou Rusin
Daemen College
4380 Main Street
Amherst, NY 14226
(716) 839-3600, ext. 387

Terry Whieldon
Fitness Sports and Physical Therapy
Maple Road
Williamsville, NY 14221
(716) 631-4816)
(716) 662-2949

Appendix E

OTHER RESOURCES

American College of Sports Medicine, Box 1440, Indianapolis, Indiana, 46206, Public Information 317-637-9200.

The American Orthopaedic Society for Sports Medicine, 70 West Hubbard Street, Suite 202, Chicago, Illinois 60610, (312) 644-2623.

Food and Drug Administration (FDA), U.S. Department of Health and Human Services, 5600 Fishers Lane, Rockville, Maryland 20857, (301) 295-8013.

Minnesota Prevention Resource Center, 2829 Verndale Avenue, Anoha, Minnesota 55303, (612) 427-5310.

National Athletic Trainers Association, 2952 Stemmons Street, Suite 200, Dallas, Texas 75247, 1-800-TRY-NATA.

National Clearinghouse for Alcohol and Drug Information (NCADI), P.O. Box 2345, Rockville, Maryland 20852, 1-800-729-6686.

National Collegiate Athletic Association (NCAA), Box 1906, Mission, Kansas 666201, 913-384-3220.

National High School Athletic Coaches Association, Box 1806, Orlando, Florida 32678, 407-628-8555.

National Institute on Drug Abuse (NIDA), U.S. Department of Health and Human Services, 5600 Fishers Lane, Rockville, Maryland 20845, (301) 443-6245.

National Federation of State High School Associations, *Target* 11724 Plaza Circle, P.O. Box 20626, Kansas City, Missouri 64195, 1-800-366-6667.

United States Olympic Committee, Olympic House, 1750 East Boulder Street, Colorado Springs, Colorado 80505-5760, (719) 632-5551.